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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/502,004

07/27/2005

Dale Read

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6802

7590

11/07/2006

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EXAMINER

JACOB, MARY C

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|----------------------------|--|
| Office Action Summary | Application No. 10/502,004 | Applicant(s) READ, DALE | |
| | Examiner Mary C. Jacob | Art Unit 2123 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-6 have been presented for examination.

Drawings

2. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

Claim Objections

3. Claim 1 is objected to because of the following informalities. Appropriate correction is required.
4. Claim 1 recites, "programme" in line 6, it would be better if written "program".
5. For claim 4, it would be better if commas were added as follows: "...and the like, and adjusting the data, which is variable and thus represents degrees of freedom of the facility, to arrive...".

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
8. Claim 1 recites the limitation "the feasibility" in line 1. There is insufficient antecedent basis for this limitation in the claim.
9. Claim 2 recites the limitation "said virtual article" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.
10. Claim 2 recites the following limitation in line 6: "any other said item ~~of~~ or component". It is unclear whether this limitation refers to "virtual items or components", "real items or components" or both virtual and real "items and components".
11. Regarding claim 4, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).
12. Claim 4 recites the limitation "the real premises" in line 4. There is insufficient antecedent basis for this limitation in the claim.
13. Claim 4 recites "such machinery" in line 5. It is unclear whether this refers to the "virtual machinery" previously recited or is a new limitation of some machinery.
14. Regarding claim 4, the phrase "and the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "and the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

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15. Claim 5 recites the limitation "the operation" in line 2. There is insufficient antecedent basis for this limitation in the claim.

16. Claim 6 recites the following terminology: "a method according to any preceding claim and substantially as hereinbefore described". This claim is vague and indefinite because it fails to recite an understandable limitation and further fails to limit any preceding claim.

17. Due to the number of 35 U.S.C. 112, second paragraph rejections, the examiner has provided a number of examples of the claim deficiencies in the above rejection(s), however, the list of rejections may not be inclusive. Applicant should refer to these rejections as examples of deficiencies and should make all necessary corrections to eliminate the 35 U.S.C. 112, second paragraph problems and place the claims in proper format.

Due to the vagueness and a lack of a clear definition of the terminology and phrases used in the specification and claims, the claims have been treated on their merits as best understood by the examiner.

Claim Rejections - 35 USC § 102

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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19. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Rossgoderer et al ("A Concept for Automatical Layout Generation", Proceedings of the IEEE International Conference on Robotics and Automation, May 21-27, 1999, pages 800-805).

20. As to Claim 1, Rossgoderer et al teaches: a method of checking the feasibility or other properties of a process involving movement and/or assembly of items or components comprising setting up, within a computer, in terms of corresponding sets of data, a virtual three-dimensional space (Introduction; Interactive Planning of Assembly Cells, paragraphs 2 and 3; Component Arrangement; Automatical Optimization of a Layout, paragraph 2) and, in such space, virtual versions of the items or components concerned, represented by corresponding sets of data (Interactive Planning of Assembly Cells; Component Arrangement; Figures 2 and 2); and operating a program in the computer so as to manipulate the virtual items or components in said virtual space and determine, by operation of the computer, potential difficulties in manipulating corresponding real items or components in real space (Interactive Planning of Assembly Cells; Component Arrangement, paragraph 3; Automatical Optimization of a Layout, paragraph 3; Automatical Path Planning, paragraph 1).

21. As to Claim 2, Rossgoderer et al teaches: wherein the data representing each said virtual article or component includes data as to nominal dimensions and data as to tolerances for deviations from said nominal dimensions in the corresponding real items or components (Component Arrangement, paragraphs 1-2, "geometrical relationships" and "constraints"; Automatical Robot Programming, paragraph 2 "geometry" and

"geometric restrictions"; and wherein the computer is programmed to detect intrusion of an envelope of one virtual component or item into an envelope of any other said item or component during such manipulations, such an intrusion representing a collision between components (Component Arrangement, paragraph 3; Automatical Optimization of a Layout, paragraph 3; Automatical Path Planning, paragraph 1).

22. As to Claim 3, Rossgoderer et al teaches: wherein, where such a collision is detected at an intermediate stage of moving a virtual component from one virtual position to another, along one path, said program is operable to test variations in such path in order to determine, if possible, a non-colliding path (Component Arrangement, paragraph 3; Automatical Optimization of a Layout, paragraph 3; Automatical Path Planning, paragraph 1).

23. Claims 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Shewchuk et al ("Virtual Environments in Manufacturing", Chapter 61, Virginia Polytechnic Institute and State University, June 1999).

24. As to Claims 4-6, Shewchuk et al teaches a review of virtual environment (VE) applications to manufacturing (61.1, "Introduction", first paragraph) and teaches various programs wherein manufacturing facilities are set up using a virtual factory in virtual manufacturing premises (section 61.3.1, paragraph 2, lines 4-5; section 61.3.2, paragraph 2, lines 4-8), virtual machinery comprising data as to dimensions, positioning, movement and timing of such machinery (section 61.3.1, paragraph 2, lines 4-5, lines 6-10) and virtual personnel (section 61.1.3, paragraphs 1 and 3; section 61.2.2, last

paragraph; section 61.5, lines 5-6); adjusting the data to arrive at an efficient workable arrangement (section 61.3.1, first paragraph; section 61.3.2, paragraph 2, lines 6-8), providing a visual display of the operation of the virtual factory (section 61.3.1, second paragraph, lines 6-10; section 61.3.2, paragraph 2, lines 1-2; section 61.3.4.2, paragraph 2).

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

26. Krishnamurthy et al ("A Hybrid Manufacturing System Modeling Environment Using VRML", In J.J. Mills & F. Kimura (Eds.), Information Infrastructure Systems for Manufacturing. Boston: Kluwer Academic Publishers, 1999) teaches the use of Virtual Reality Modeling Language (VRML) in a manufacturing modeling environment wherein a virtual factory is built including 3-D models of machines and personnel and the flow of parts through the facility.

27. Andre et al, ("Expert Systems Applied to Scheduling of Assembly Line", Proceedings of the International Conference on Systems, Man and Cybernetics, Vol. 3, October 17-20 1993, pages 743-748) teaches IDEAL-CIM software used for the design and evaluation of manual and partially automated assembly workstations, and teaches tools such as Workstation Layout Generation and Human Movement Simulation.

28. Lefort et al, ("Interactive Virtual Factory for Design of a Shopfloor Using Single Cluster Analysis", Proceedings of the 1998 IEEE International Conference on Robotics

& Automation, Leuven, Belgium, May 1998) teaches the development of an interactive virtual factory test bed used to explore the applications of Virtual Environments in the area of manufacturing automation.

29. Jayaram et al (US Patent Application Publication 2002/0123812) teaches a virtual assembly design environment that simulates axial and planar constrained motion for multiple parts in any combination and application order. Dynamic simulation methods are used to simulate object behavior in the design environment using physical laws and collision detection algorithms.

30. Hubrecht et al (US Patent 6,791,549) teaches generating interactive displays of a complex virtual environment. In such systems, a simulation component may be provided for performing simulations based on virtual reality file(s). The VR files may include data defining a collision detection hierarchy of bounding boxes that contain elements represented in the complex environment.

31. Gadh et al (US Patent 6,725,184) teaches methods for automated selective disassembly by analyzing a geometric model of a multi-component assembly to determine an optimal disassembly sequence in a computationally efficient manner.

32. Frisken Gibson (US Patent 5,548,694) teaches voxel-based objects are manipulated and interacted with in a physically realistic way such that during movement of the graphical objects, collisions are automatically detected and the graphical objects are prevented from penetrating each other.

33. Schreier et al (US Patent Application Publication 2004/0186697) teaches a method and a system for supporting the planning and design of manufacturing systems.

34. Hirata et al (US Patent 6,157,902) teaches a disassembly route producing apparatus searches for a disassembly route for disassembling a product into its component parts.

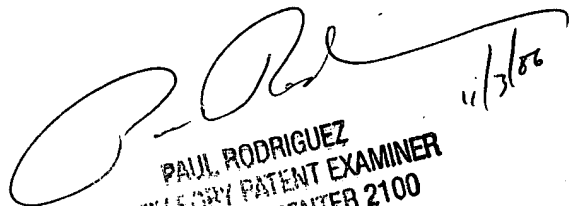
35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C. Jacob whose telephone number is 571-272-6249. The examiner can normally be reached on M-F 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary C. Jacob
Examiner
AU2123

MCJ
11/1/06


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